

Concurrent heatwaves, sea level rises pose a threat to coastlines

The Hindu Bureau

Concurrent occurrences of heatwaves and extreme short-term sea level rise at the same coastal locations significantly increased between 1998 and 2017 when compared to the preceding twenty years, as per a study published in the journal *Communications Earth & Environment*.

The study also suggests that these events may be five times more likely to occur between 2025 and

2049 under a modelled high emissions scenario.

A so-called 'concurrent heatwave and extreme sea level' (CHWESL) event is when a heatwave and an extreme short-term sea level rise occur at the same coastal location over the same time period.

This can pose a serious threat to coastal communities. Yet, there has so far been little research into the characteristics and occurrences of these events.

Shuo Wang and Mo

Zhou from the Hong Kong Polytechnic University, Hong Kong, investigated CHWESL events worldwide between 1979 and 2017 and projected future events between 2025 and 2049 under a high emissions climate scenario (the IPCC's SSP5-8.5 scenario). The authors only included events occurring in the extended summer season, spanning May to September in the Northern Hemisphere, and November to March in the Southern

Hemisphere. The authors found that approximately 88% of the world's coastlines experienced a CHWESL event during the period 1979-2017. Approximately 39% of coastlines recorded a significant increase in the total duration of CHWESL conditions experienced over a year during the period 1998-2017 compared to during 1979-1998, with tropical regions more likely to experience a greater increase.

The authors also found

a significant association between heatwave intensity and the probability of a CHWESL event occurring, with a 1% increase in heatwave intensity associated with an approximately 2% increase in the probability of a CHWESL event occurring. From their projections, the authors suggest that global coastal areas could experience on average 38 days of CHWESL conditions each year between 2025 and 2049, an increase of 31 days compared

to the historical period of 1989-2013.

The authors conclude that CHWESL events could pose a significant threat to coastal communities, particularly from the risks of excess heat to human health.

They note that countries in tropical areas are likely to be the most severely affected, and that many of these countries are low or middle-income countries which may struggle to cope with the effects.